

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants : Zeev ALEYRAZ et al. Group Art Unit: 2838
Appln. No. : 10/803,900 Examiner: R. Grant
Filed : March 19, 2004 Confirmation No.: 6703
For : INTEGRATED FUEL CELL CONTROLLER FOR DEVICES

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop **Appeal Brief - Patents**
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

This appeal is from the Examiner's final rejection of claims 1 – 11, 13 – 27, and 29 – 43 as set forth in the Final Office Action of August 30, 2006.

A Notice of Appeal in response to the August 30, 2006 Final Office Action was filed February 28, 2007 with a three-month extension of time. Accordingly, the instant Appeal Brief is being timely submitted by the initial due date of April 30, 2007 (April 28, 2007 being a Saturday).

The requisite fee under 37 C.F.R. 1.17(c) in the amount of \$ 500.00 for the filing of the Appeal Brief is being paid herewith. However, if for any reason the necessary fee is not associated with this file, the undersigned authorizes the charging of any filing fees for the Appeal Brief and/or any necessary extension of time fees to Deposit Account No. 19 - 0089.

(1) **REAL PARTY IN INTEREST**

The real party in interest is More Energy Ltd. Of Yehud, Israel, by an assignment recorded in the U.S. Patent and Trademark Office on August 2, 2005 at Reel 016831 and Frame 0797.

(2) **RELATED APPEALS AND INTERFERENCES**

No related appeals and/or interferences are pending.

(3) STATUS OF THE CLAIMS

Claims 1 – 11, 13 – 27, and 29 – 43 stand finally rejected. As claims 12 and 28 have been objected to as containing allowable subject matter, these claims are not part of this appeal.

(4) **STATUS OF THE AMENDMENTS**

No amendments have been entered subsequent to the Final Office Action of August 30, 2006.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

The instant invention is directed to an interface device to communicate with a fuel cell and a device powered by the fuel cell and process for controlling a fuel cell and a device powered by the fuel cell. (Specification, Page 1, lines 4 – 6 (Paragraph [0001])).

The following descriptions are made with respect to the independent claim and include references to particular parts of the specification. As such, the following is merely exemplary and is not a surrender of other aspects of the present invention that are also enabled by the present specification and that are directed to equivalent structures or methods within the scope of the claims.

Independent claim 1 is directed to a power unit 1 for an electronic device 16. The power unit 1 includes a fuel cell 8 having a low output voltage between 0.3 and 1 V, and a conversion device 9 coupled to said fuel cell 8 to convert an input voltage as low as 0.3 V to a higher output voltage to operate the electronic device 16. (Specification, Page 10, lines 10 – 27 (Paragraphs [0045] – [0047]); and Figures 1 and 2).

Independent claim 17 is directed to a power unit 1 for an electronic device 16. The power unit 1 includes a fuel cell 8, a control unit 17 structured and arranged to control and regulate said fuel cell 8, and a communication interface structured to provide two-way communication between said control unit 17 and the electronic device 16. (Specification, Page 10, lines 10 – 19 (Paragraphs [0045] – [0046]; Page 13, lines 10 – 27 (Paragraph [0056]); and Figures 1 and 3).

Independent claim 33 is directed to a process for control and regulation of an electronic device 16 powered by a fuel cell 8. The process includes coupling a fuel cell 8 to an electronic device 16, and boosting an output voltage of the fuel cell 8 as low as 0.3V to a level required by

the electronic device 16. (Specification, Page 10, lines 10 - 27 (Paragraphs [0045] – [0047]); and Figures 1 and 2).

Independent claim 43 is directed to a process for control and regulation of an electronic device 16 powered by a fuel cell 8. The process includes coupling a fuel cell 8 to an electronic device 16, controlling operation of the fuel cell 8 via a control unit, and establishing two-way communication between the control unit and the electronic device 16. (Specification, Page 10, lines 10 – 19 (Paragraphs [0045] – [0046]; Page 13, lines 10 – 27 (Paragraph [0056]); and Figures 1 and 3).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(A) Claims 1, 2, 4, 9, 16, 33, 34, 36, 37, and 41 are Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over FISHER et al. (U.S. Patent No. 6,908,500) [hereinafter “FISHER”] in view of CABASSO et al. (U.S. Patent No. 6,987,163) [hereinafter “CABASSO”];

(B) Claims 8 and 40 are Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over FISHER in view of CABASSO and further in view of WOODWARD et al. (U.S. Patent No. 4,563,630) [hereinafter “WOODWARD”];

(C) Claims 13 – 15 and 42 are Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over FISHER in view of CABASSO and further in view of YOON et al. (U.S. Patent No. 6,160,382) [hereinafter “YOON”];

(D) Claims 17, 29 – 32, and 43 are Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over FISHER in view of YOON;

(E) Claims 18, 19, and 21 – 23 are Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over FISHER in view of YOON and further in view of CABASSO;

(F) Claims 6, 7, 38, and 39 are Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over FISHER in view of CASSABO and further in view of SCHMIDT et al. (U.S. Patent No. 6,858,335) [hereinafter “SCHMIDT”];

(G) Claims 24 – 26 are Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over FISHER in view of YOON and further in view of CABASSO and further in view of SCHMIDT;

(H) Claim 27 is Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over FISHER in view of YOON and further in view of CABASSO and further in view of

WOODWARD;

(I) Claims 3, 5, 10, and 35 are Rejected Under 35 U.S.C. § 103(a) as being

Unpatentable over FISHER in view of CABASSO and further in view of

KOMATSU et al. (U.S. Patent No. 6,917,179) [hereinafter “KOMATSU”];

(J) Claim 20 is Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over

FISHER in view of YOON and further in view of CABASSO and further in view of

KOMATSU; and

(K) Claim 11 is Rejected Under 35 U.S.C. § 103(a) as being Unpatentable over

FISHER in view of CABASSO and KOMATSU and further in view of SCHMIDT.

(7) **ARGUMENT**

(A) The Rejection of Claims 1, 2, 4, 8, 16, 33, 34, 36, 37, and 41 Under 35 U.S.C. § 103(a) as being Unpatentable FISHER in view of CABASSO is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

The Examiner asserts that FISHER shows the recited features except for an output voltage as low as 0.3V, but asserts it would have been obvious to use a fuel cell having an output voltage as low as 0.3V in view of the disclosure of CABASSO. Appellants traverse the Examiner's assertions.

Independent Claim 1:

Appellants' independent claim 1 recites, *inter alia*, a fuel cell having a low output voltage between 0.3 and 1 V, and a conversion device coupled to said fuel cell to convert an input voltage as low as 0.3 V to a higher output voltage to operate the electronic device. Appellants submit that no proper combination of the applied documents teaches or suggests the combination of features recited in at least independent claim 1.

In contrast to the instant invention, neither applied document teaches or suggests a conversion device coupled to the fuel cell to convert a voltage as low as 0.3 V, as recited in independent claim 1. As neither document even arguably suggests the above-noted specifically recited device or process features operating with an output voltage as low as 0.3V, Appellants submit no proper combination of FISHER and CABASSO can even arguably render unpatentable the combination of features recited in the pending claims.

While both FISHER and CABASSO disclose fuel cells, neither document provides any teaching or suggestion of a converter device to convert an output voltage of the fuel cell as low as 0.3 V or any process for boosting the output voltage of the fuel cell as low as 3.0 V, as recited in

the pending claims. In fact, Appellants note, as acknowledged by the Examiner, FISHER fails to provide any teaching or suggestion of an output voltage for the fuel cell. Thus, Appellants submit FISHER cannot provide any reasonable basis for utilizing a converter device to convert an output voltage as low as 0.3 V or for boosting an output voltage as low as 0.3 V, as recited in the claims.

While acknowledging CABASSO provides an arguable teaching of a fuel cell having an output voltage between 0.3 V and 1.0 V, Appellants submit neither CABASSO nor FISHER provide any teaching or suggestion of a converter device or of a process for converting an output voltage as low as 0.3 V, as recited in the claims. Thus, Appellants submit no proper combination of the applied art renders the instant invention unpatentable.

Moreover, Appellants submit the only arguably similarity between FISHER and CABASSO is that both documents relate, generally, to fuel cells. In this regard, FISHER discloses a Direct Methane Fuel Cell (DMFC), provides a convenient history of fuel cell development, and is directed to controlling exhausted gaseous by products of the fuel cell, whereas CABASSO is directed to polybenzimidazole membranes for enhanced polymer electrochemical cells. Thus, while CABASSO provides an arguable disclosure that an output of the enhanced polymer electrochemical cell may be 0.3 V to 1.0 V, there is no teaching or suggestion that a same output range would be achieved by the fuel cell of FISHER. However, Appellants submit this disclosure is no more telling than if FISHER disclosed the use of a battery and CABASSO disclosed a battery outputting a voltage between 0.3 V and 1.0 V. As CABASSO's disclosure of a specific battery output provides one ordinarily skilled in the art with any direction as to the operation of FISHER, Appellants submit there is no reasonable rationale to support the Examiner's assertions of obviousness. Moreover, as the "batteries" of FISHER

and CABASSO are made of wholly different materials, there is no arguably suggestion that one battery could be replaced with the other, as asserted by the Examiner.

Appellants submit, as there is no suggestion at all as to the output voltage of the FISHER fuel cell, Appellants submit the art of record cannot even arguably suggest the operating parameters of the dc to dc converter of FISHER, and certainly not that such a device could convert an output voltage as low as 0.3 V, as recited in the claims.

Thus, Appellants note the Examiner has not identified any disclosure related to the dc to dc converter of FISHER to even arguably support his assertions of obviousness. Because neither document teaches or suggests at least the above-noted features of at least independent claim 1, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Further, as the Examiner has not shown any operating parameters of the conversion device of FISHER, Appellants submit it cannot be determined from the applied art whether the dc-dc converter device of FISHER would operate in its intended manner when coupled to the fuel cell of CABASSO, or whether a sufficient voltage could be obtained when the fuel cell of CABASSO is used with the dc-dc converter device of FISHER.

A § 103 rejection requires the Examiner to first establish a *prima facie* case of obviousness: “The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the Examiner does not produce a *prima facie* case, the Appellants are under no obligation to submit evidence of nonobviousness.” Manual of Patent Examining Procedure § 2142. The Court of Appeals for the Federal Circuit has set forth three elements, which must be shown for *prima facie* obviousness:

“First, there must be some suggestion or motivation, either in the references

themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teachings or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

While the Examiner asserts one ordinarily skilled in the art reviewing both FISHER and CABASSO would see the benefit of modifying the FISHER dc-dc converter to allow operation at a lower voltage, the Examiner has not provided a *prima facie* case of obviousness under 35 U.S.C. § 103(a). Instead, the Examiner's rejection is based upon mere conjecture, i.e., as the prior art suggests both a device for converting the voltage of a fuel cell (CABASSO) and a fuel cell having a low voltage (FISHER), it would have been obvious to convert a low voltage. However, the art of record fails to provide any arguable teaching or suggestion of a dc-dc converter structurally capable of converting a voltage as low as 0.3 V, i.e., the asserted output voltage of FISHER, nor is there any arguable teaching or suggestion in the applied art as to how one ordinarily skilled in the art would combine FISHER and CABASSO in any obvious manner to render the instant invention obvious.

Therefore, Appellants submit, as the Examiner has not shown any arguable reasonable expectation of success, i.e., since there is no arguable suggestion the converter of CABASSO can effectively operate on an input voltage as low as 0.3 V, the Examiner has not provided a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

Further, Appellants submit rejections based on 35 U.S.C. § 103 must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. The Examiner has the initial duty of supplying the factual basis for the rejection and

may not, because of doubt that the invention is patentable, resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis. *See In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 177 (CCPA 1967). As stated in *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984):

[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.

In view of the foregoing discussion of the teachings and defects of both FISHER and CABASSO, Appellants submit it is apparent the only reason to combine the teachings of the applied references in the manner proposed by the Examiner results from a review of Appellants' disclosure and the application impermissible hindsight.

Thus, Appellants further submit that the art of record fails to provide the requisite motivation or rationale for combining FISHER and CABASSO in the manner asserted by the Examiner, such that the instant rejection is improper and should be withdrawn.

Independent Claim 33:

Appellants' independent claim 33 recites, *inter alia*, coupling a fuel cell to an electronic device, and boosting an output voltage of the fuel cell as low as 0.3V to a level required by the electronic device. Appellants submit that no proper combination of the applied documents teaches or suggests the combination of features recited in at least independent claim 33.

In contrast to the instant invention, neither applied document teaches or suggests any manner for boosting the output voltage of a fuel cell as low as 0.3 V to a level required by an electronic device, as recited in independent claim 33. As neither document even arguably

suggests the above-noted specifically recited device or process features operating with an output voltage as low as 0.3V, Appellants submit no proper combination of FISHER and CABASSO can even arguably render unpatentable the combination of features recited in the pending claims.

While both FISHER and CABASSO disclose fuel cells, neither document provides any teaching or suggestion of a converter device to convert an output voltage of the fuel cell as low as 0.3 V or any process for boosting the output voltage of the fuel cell as low as 3.0 V, as recited in the pending claims. In fact, Appellants note, as acknowledged by the Examiner, FISHER fails to provide any teaching or suggestion of an output voltage for the fuel cell. Thus, Appellants submit FISHER cannot provide any reasonable basis for utilizing a converter device to convert an output voltage as low as 0.3 V or for boosting an output voltage as low as 0.3 V, as recited in the claims.

While acknowledging CABASSO provides an arguable teaching of a fuel cell having an output voltage between 0.3 V and 1.0 V, Appellants submit neither CABASSO nor FISHER provide any teaching or suggestion of a converter device or of a process for converting an output voltage as low as 0.3 V, as recited in the claims. Thus, Appellants submit no proper combination of the applied art renders the instant invention unpatentable.

Moreover, Appellants submit the only arguably similarity between FISHER and CABASSO is that both documents relate, generally, to fuel cells. In this regard, FISHER discloses a Direct Methane Fuel Cell (DMFC), provides a convenient history of fuel cell development, and is directed to controlling exhausted gaseous by products of the fuel cell, whereas CABASSO is directed to polybenzimidazole membranes for enhanced polymer electrochemical cells. Thus, while CABASSO provides an arguable disclosure that an output of the enhanced polymer electrochemical cell may be 0.3 V to 1.0 V, there is no teaching or

suggestion that a same output range would be achieved by the fuel cell of FISHER. However, Appellants submit this disclosure is no more telling than if FISHER disclosed the use of a battery and CABASSO disclosed a battery outputting a voltage between 0.3 V and 1.0 V. As CABASSO's disclosure of a specific battery output provides one ordinarily skilled in the art with any direction as to the operation of FISHER, Appellants submit there is no reasonable rationale to support the Examiner's assertions of obviousness. Moreover, as the "batteries" of FISHER and CABASSO are made of wholly different materials, there is no arguably suggestion that one battery could be replaced with the other, as asserted by the Examiner.

Moreover, as there is no suggestion at all as to the output voltage of the FISHER fuel cell, Appellants submit the art of record cannot even arguably suggest the operating parameters of the dc to dc converter of FISHER, and certainly not that such a device could convert an output voltage as low as 0.3 V, as recited in the claims.

Thus, Appellants note the Examiner has not identified any disclosure related to the dc to dc converter of FISHER to even arguably support his assertions of obviousness. Because neither document teaches or suggests at least the above-noted features of at least independent claim 33, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Further, as the Examiner has not shown any operating parameters of the conversion device of FISHER, Appellants submit it cannot be determined from the applied art whether the dc-dc converter device of FISHER would operate in its intended manner when coupled to the fuel cell of CABASSO, or whether a sufficient voltage could be obtained when the fuel cell of CABASSO is used with the dc-dc converter device of FISHER.

A § 103 rejection requires the Examiner to first establish a *prima facie* case of

obviousness: “The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the Examiner does not produce a *prima facie* case, the Appellants are under no obligation to submit evidence of nonobviousness.” Manual of Patent Examining Procedure § 2142. The Court of Appeals for the Federal Circuit has set forth three elements, which must be shown for *prima facie* obviousness:

“First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teachings or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).”

While the Examiner asserts one ordinarily skilled in the art reviewing both FISHER and CABASSO would see the benefit of modifying the FISHER dc-dc converter to allow operation at a lower voltage, the Examiner has not provided a *prima facie* case of obviousness under 35 U.S.C. § 103(a). Instead, the Examiner’s rejection is based upon mere conjecture, i.e., as the prior art suggests both a device for converting the voltage of a fuel cell (CABASSO) and a fuel cell having a low voltage (FISHER), it would have been obvious to convert a low voltage. However, the art of record fails to provide any arguable teaching or suggestion of a dc-dc converter is structurally capable of boosting a voltage as low as 0.3 V, i.e., the asserted output voltage of FISHER, nor is there any arguable teaching or suggestion in the applied art as to how one ordinarily skilled in the art would combine FISHER and CABASSO in any obvious manner to render the instant invention obvious.

Therefore, Appellants submit, as the Examiner has not shown any arguable reasonable expectation of success, i.e., since there is no arguable suggestion the converter of CABASSO can

effectively operate on an input voltage as low as 0.3 V, the Examiner has not provided a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

Further, Appellants submit rejections based on 35 U.S.C. § 103 must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. The Examiner has the initial duty of supplying the factual basis for the rejection and may not, because of doubt that the invention is patentable, resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis. *See In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 177 (CCPA 1967). As stated in *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984):

[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.

In view of the foregoing discussion of the teachings and defects of both FISHER and CABASSO, Appellants submit it is apparent the only reason to combine the teachings of the applied references in the manner proposed by the Examiner results from a review of Appellants' disclosure and the application impermissible hindsight.

Thus, Appellants further submit that the art of record fails to provide the requisite motivation or rationale for combining FISHER and CABASSO in the manner asserted by the Examiner, such that the instant rejection is improper and should be withdrawn.

Thus, Appellants further submit that the art of record fails to provide the requisite motivation or rationale for combining FISHER and CABASSO in the manner asserted by the Examiner, such that the instant rejection is improper and should be withdrawn.

Dependent Claims 2, 4, 8, 16, 34, 36, 37, and 41:

Appellants submit that claims 2, 4, 9, 16, 34, 36, 37, and 41 are allowable at least for the reason that these claims depend from allowable base claims, and because these claims recite additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER in view of CABASSO renders obvious the combination of features recited in at least claims 2, 4, 9, 16, 34, 36, 37, and 41.

Claim 2:

Appellants submit that claim 2 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO fail to positively disclose said conversion device comprises a DC/DC converter, as recited in claim 2.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 2 is improper and should be withdrawn.

Claim 4:

Appellants submit that claim 4 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO fail to positively disclose a backup battery coupled to said conversion device in order to at least supplement the output of DC/DC converter, as recited in claim 4.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants

submit that the rejection of independent claim 4 is improper and should be withdrawn.

Claim 9:

Appellants submit that claim 9 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO fail to positively disclose a control unit structured and arranged to control operation of said conversion device, as recited in claim 9.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 9 is improper and should be withdrawn.

Claim 16:

Appellants submit that claim 16 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO fail to positively disclose said fuel cell is an individual fuel cell, as recited in claim 16.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 16 is improper and should be withdrawn.

Claim 34:

Appellants submit that claim 34 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO fail to positively disclose the boosting of the output voltage is performed by a DC/DC

converter, as recited in claim 34.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 34 is improper and should be withdrawn.

Claim 36:

Appellants submit that claim 36 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO fail to positively disclose supplementing the output of the DC/DC converter with a backup battery, whereby the fuel cell is utilized at a maximum efficiency capacity, as recited in claim 36.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 36 is improper and should be withdrawn.

Claim 37:

Appellants submit that claim 37 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO fail to positively disclose boosting a voltage of said backup battery to a necessary level via a battery up converter, as recited in claim 37.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 37 is improper and should be withdrawn.

Claim 41:

Appellants submit that claim 41 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO fail to positively disclose controlling the individual components of the power unit via a control unit, as recited in claim 41.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 41 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 1, 2, 4, 8, 16, 33, 34, 36, 37, and 41 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of CABASSO and an early allowance of all claims on appeal.

(B) The Rejection of Claims 8 and 40 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of CABASSO and further in view of WOODWARD is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

The Examiner acknowledges that neither FISHER nor CASSABO teach or suggest a dump resistor coupled to the conversion device, but that it would have been obvious to do so in view of the disclosure of WOODWARD. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER and CABASSO, Appellants note that WOODWARD fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that WOODWARD likewise fails to teach or suggest a conversion device coupled to said fuel cell to convert an input voltage as low as 0.3 V to a higher output voltage to operate the electronic device, as recited in claim 1, or boosting an output voltage of the fuel cell as low as 0.3V to a level required by the electronic device, as recited in claim 33.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 1 and 33, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Appellants further note that, notwithstanding any particular teaching of this document, WOODWARD fails to provide the requisite motivation or rationale to render the asserted combination of FISHER and CABASSO proper under 35 U.S.C. § 103(a), such that this rejection is improper and should be withdrawn.

Moreover, as WOODWARD is directed to a device for governing a hydroelectric generating plant, not to a control for a fuel cell, Appellants submit this document is wholly

unrelated to the subject matter of either FISHER or CABASSO, such that it would not have been obvious to combine these documents in the manner asserted by the Examiner.

While the Examiner asserts WOODWARD's disclosure of controlling power generation and power supply is in the same field as a fuel cell control device, Appellants submit this assertion is not even arguably supportable. As WOODWARD relates to a hydroelectric generating plant, one ordinarily skilled in the art would not even arguably refer to such subject matter when concerned with controlling a battery/fuel cell, since these applications are so wholly unrelated. Of course, even assuming, *arguendo*, one were to find it obvious to refer to WOODWARD for controlling a fuel cell, which Appellants submit one would not, there is no arguable teaching or suggestion in WOODWARD for converting a voltage as low as 0.3 V or for controlling a fuel cell, such that the art of record fails to provide the requisite motivation or rationale for modifying any proper combination of FISHER and CABASSO. Thus, Appellants submit the art of record fails to teach or suggest any arguable combination of the applied art that would render unpatentable the invention recited in the independent claims 1 and 33.

Thus, Appellants submit that claims 8 and 40 are allowable at least for the reason that these claims depend from allowable base claims, and because these claims recite additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER, CABASSO, and WOODWARD renders obvious the combination of features recited in at least claims 8 and 40.

Claim 8:

Appellants submit that claim 8 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of

CABASSO and further in view of WOODWARD fail to positively disclose a dump resistor coupled to said conversion device that is structured and arranged to consume additional load from said fuel cell, as recited in claim 8.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 8 is improper and should be withdrawn.

Claim 40:

Appellants submit that claim 40 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of WOODWARD fail to positively disclose consuming additional load from the fuel cell via a dump resistor coupled to the conversion device that is structured and arranged to consume additional load from said fuel cell, as recited in claim 40.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 40 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 8 and 40 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of CABASSO and further in view of WOODWARD and an early allowance of all claims on appeal.

(C) The Rejection of Claims 13 – 15 and 42 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of CABASSO and further in view of YOON is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

The Examiner acknowledges that neither FISHER nor CASSABO teach or suggest an A/D or D/A converter, but that it would have been obvious to do so in view of the disclosure of YOON. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER and CABASSO, Appellants note that YOON fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that YOON likewise fails to teach or suggest a conversion device coupled to said fuel cell to convert an input voltage as low as 0.3 V to a higher output voltage to operate the electronic device, as recited in claim 1, or boosting an output voltage of the fuel cell as low as 0.3V to a level required by the electronic device, as recited in claim 33.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 1 and 33, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Moreover, while YOON is directed to a device for determining characteristic parameters of a charge storage device, Appellants submit this document fails to even arguably teach or suggest *two-way* communication between a *control unit* and the *electrical device*, as recited in at least claims 15 – 17 and 42.

Appellants further note that, notwithstanding any particular teaching of this document, YOON fails to provide the requisite motivation or rationale to render the asserted combination of

FISHER and CABASSO proper under 35 U.S.C. § 103(a), such that this rejection is improper and should be withdrawn.

Thus, Appellants submit that claims 13 – 15 and 42 are allowable at least for the reason that these claims depend from allowable base claims, and because these claims recite additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER, CABASSO, and YOON renders obvious the combination of features recited in at least claims 13 – 15 and 42.

Claim 13:

Appellants submit that claim 13 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of YOON fail to positively disclose said control unit comprising an A/D converter structured to receive voltage and current data from said conversion device, a D/A converter structured to output reference voltage and current levels, and a data processor arranged to receive data from said A/D converter and to forward data to said D/A converter, as recited in claim 13.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 13 is improper and should be withdrawn.

Claim 14:

Appellants submit that claim 14 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of

CABASSO and further in view of YOON fail to positively disclose a charger interface coupled to said data processor, and a battery monitor coupled to said charger interface structured and arranged to collect battery data, as recited in claim 14.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 14 is improper and should be withdrawn.

Claim 15:

Appellants submit that claim 8 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of YOON fail to positively disclose a host interface structured to provide two-way communication between said control unit and the electronic device, as recited in claim 15.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 15 is improper and should be withdrawn.

Claim 42:

Appellants submit that claim 42 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of YOON fail to positively disclose establishing two-way communication between the control unit and the electronic device, as recited in claim 42.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate

evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 42 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 13 – 15 and 42 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of CABASSO and further in view of YOON and an early allowance of all claims on appeal.

(D) The Rejection of Claims 17, 29 – 32, and 43 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of YOON is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

While acknowledging FISHER fails to teach or suggest two-way communication between a control unit and the electronic device, the Examiner asserts it would have been obvious to provide such two-way communication, as taught by YOON. Appellants traverse the Examiner's assertions.

Independent Claim 17:

Appellants' independent claim 17 recites, *inter alia*, a control unit structured and arranged to control and regulate said fuel cell, and a communication interface structured to provide two-way communication between said control unit and the electronic device. Appellants submit that no proper combination of the applied documents teaches or suggests the combination of features recited in at least independent claim 17.

Appellants agree with the Examiner that FISHER fails to provide any teaching or suggestion of two-way communication between the control unit and the electronic device. However, contrary to the Examiner's assertions, Appellants submit that the arrangement of YOON, which includes a control unit having an input and output coupled to the *charge storage device* under examination, does not teach or suggest *two-way* communication between the recited control unit and *the electronic device*, as recited in at least independent claim 17.

Because neither of the applied documents teaches or suggests at least the above-noted features of the claims, it would appear that no proper combination of these documents can render unpatentable the instant invention.

Further, Appellants note that YOON merely discloses an I/O interface coupled to a charge

storage device, and there appears no reasonable rationale for modifying FISHER in the manner asserted by the Examiner, or in any manner that would render the instant application unpatentable.

Thus, Appellants further submit that the art of record fails to provide the requisite motivation or rationale for combining FISHER and YOON in the manner asserted by the Examiner, such that the instant rejection is improper and should be withdrawn.

Independent Claim 43:

Appellants' independent claim 43 recites, *inter alia*, coupling a fuel cell to an electronic device, and controlling operation of the fuel cell via a control unit; and establishing two-way communication between the control unit and the electronic device. Appellants submit that no proper combination of the applied documents teaches or suggests the combination of features recited in at least independent claim 43.

Appellants agree with the Examiner that FISHER fails to provide any teaching or suggestion of two-way communication between the control unit and the electronic device. However, contrary to the Examiner's assertions, Appellants submit that the arrangement of YOON, which includes a control unit having an input and output coupled to the *charge storage device* under examination, does not teach or suggest *two-way* communication between the recited control unit and *the electronic device*, as recited in at least independent claim 43.

Because neither of the applied documents teach or suggest at least the above-noted features of the claims, it would appear that no proper combination of these documents can render unpatentable the instant invention.

Further, Appellants note that YOON merely discloses an I/O interface coupled to a charge storage device, and there appears no reasonable rationale for modifying FISHER in the manner

asserted by the Examiner, or in any manner that would render the instant application unpatentable.

Thus, Appellants further submit that the art of record fails to provide the requisite motivation or rationale for combining FISHER and YOON in the manner asserted by the Examiner, such that the instant rejection is improper and should be withdrawn.

Dependent Claims 29 – 32:

Further, Appellants submit that claims 29 – 32 are allowable at least for the reason that these claims depend from allowable base claims, and because these claims recite additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER and CABASSO renders obvious the combination of features recited in at least claims 29 – 32.

Accordingly, Appellants request the Examiner reconsider and withdraw the rejection of claims 17, 29 – 32, and 43 under 35 U.S.C. § 103(a) and indicate that these claims are allowable.

Claim 29:

Appellants submit that claim 29 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON fail to positively disclose said control unit comprising an A/D converter structured to receive voltage and current data from said conversion device, a D/A converter structured to output reference voltage and current levels, and a data processor arranged to receive data from said A/D converter and to forward data to said D/A converter, as recited in claim 29.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants

submit that the rejection of independent claim 29 is improper and should be withdrawn.

Claim 30:

Appellants submit that claim 30 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON fail to positively disclose a charger interface coupled to said data processor, and a battery monitor coupled to said charger interface structured and arranged to collect battery data, as recited in claim 30.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 30 is improper and should be withdrawn.

Claim 31:

Appellants submit that claim 31 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON fail to positively disclose a host interface structured to provide two-way communication between said control unit and the electronic device, as recited in claim 31.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 31 is improper and should be withdrawn.

Claim 32:

Appellants submit that claim 32 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present

invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON fail to positively disclose said fuel cell is an individual fuel cell, as recited in claim 32.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 32 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 17, 29 – 32, and 43 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of YOON and an early allowance of all claims on appeal.

(E) The Rejection of Claims 18, 19, and 21 – 23 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of YOON and further in view of CABASSO is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

While acknowledging that neither FISHER nor YOON teach or suggest an individual fuel cell or the recited low voltage, the Examiner asserts it would have been obvious to use a fuel cell having a voltage as low as 0.3V, as taught by CABASSO. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER and YOON, Appellants note that CABASSO fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that CABASSO likewise fails to teach or suggest two-way communication between the recited control unit and electronic device, as recited in claim 17.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 17, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Moreover, while CABASSO discloses a fuel cell having an open cell voltage of 1.0V and a current density of $1.2\text{A}/\text{cm}^2$ at 0.3V, none of the applied documents teach or suggest a dc-dc converter device coupled to the fuel cell to convert an input voltage *as low as 0.3V* to a higher output voltage to operate an electronic device. In any event, notwithstanding any particular teaching of this document, CABASSO fails to provide the requisite motivation or rationale to render the asserted combination of FISHER and YOON proper under 35 U.S.C. § 103(a), such that this rejection is improper and should be withdrawn.

Thus, Appellants submit that claims 18, 19, and 21 – 23 are allowable at least for the reason that these claims depend from allowable base claims, and because these claims recite additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER, YOON, and CABASSO renders obvious the combination of features recited in at least claims 18, 19, and 21 – 23.

Claim 18:

Appellants submit that claim 18 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO fail to positively disclose said fuel cell is an individual fuel cell having a low voltage of between 0.3 and 1V, said power unit further comprises a conversion device coupled to said fuel cell to convert an input voltage from said fuel cell as low as 0.3 V to a higher output voltage to operate the electronic device, as recited in claim 18.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 18 is improper and should be withdrawn.

Claim 19:

Appellants submit that claim 19 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO fail to positively disclose said conversion device comprises a DC/DC converter, as recited in claim 19.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate

evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 19 is improper and should be withdrawn.

Claim 21:

Appellants submit that claim 21 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO fail to positively disclose a backup battery coupled to said conversion device in order to at least supplement the output of DC/DC converter, as recited in claim 21.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 21 is improper and should be withdrawn.

Claim 22:

Appellants submit that claim 22 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO fail to positively disclose a battery up converter coupled to said backup battery to boost a voltage of said backup battery to a necessary level, as recited in claim 22.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 22 is improper and should be withdrawn.

Claim 23:

Appellants submit that claim 23 is allowable at least for the reason that it depends from

allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO fail to positively disclose said control unit is coupled to said conversion device, backup battery, and battery up converter in order to control and regulate the energy supplied to the electronic device, as recited in claim 23.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 23 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 18, 19, and 21 – 23 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of YOON and further in view of CABASSO and an early allowance of all claims on appeal.

(F) The Rejection of Claims 6, 7, 38, and 39 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of CABASSO and further in view of SCHMIDT is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

While acknowledging that neither FISHER nor CASSABO teaches or suggest the recited heating device, the Examiner asserts it would have been obvious to use a heating device coupled to the backup battery and to the fuel cell, as taught by SCHMIDT. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER and CABASSO, Appellants note that SCHMIDT fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that SCHMIDT likewise fails to teach or suggest a conversion device coupled to said fuel cell to convert an input voltage as low as 0.3 V to a higher output voltage to operate the electronic device, as recited in claim 1, or boosting an output voltage of the fuel cell as low as 0.3V to a level required by the electronic device, as recited in claim 33.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 1 and 33, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Appellants further note that, notwithstanding any particular teaching of this document, SCHMIDT fails to provide the requisite motivation or rationale to render the asserted combination of FISHER and CABASSO proper under 35 U.S.C. § 103(a), such that this rejection is improper and should be withdrawn.

Thus, Appellants submit that claims 6, 7, 38, and 39 are allowable at least for the reason

that these claims depend from allowable base claims, and because these claims recite additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER, CABASSO, and SCHMIDT renders obvious the combination of features recited in at least claims 6, 7, 38, and 39.

Claim 6:

Appellants submit that claim 6 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of SCHMIDT fail to positively disclose a heating device coupled to said backup battery and to said fuel cell that is structured and arranged to heat said fuel cell, as recited in claim 6.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 6 is improper and should be withdrawn.

Claim 7:

Appellants submit that claim 7 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of SCHMIDT fail to positively disclose a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature, as recited in claim 7.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 7 is improper and should be withdrawn.

Claim 38:

Appellants submit that claim 38 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of SCHMIDT fail to positively disclose heating the fuel cell via the backup battery, as recited in claim 38.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 38 is improper and should be withdrawn.

Claim 39:

Appellants submit that claim 39 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of SCHMIDT fail to positively disclose monitoring fuel cell temperature, as recited in claim 39.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 39 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 6, 7, 38, and 39 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of CABASSO and further in view of SCHMIDT and an early allowance of all claims on appeal.

(G) The Rejection of Claims 24 – 26 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of YOON and further in view of CABASSO and SCHMIDT is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

While acknowledging that none of FISHER, YOON, or CASSABO teaches or suggests a heater to heat a fuel cell, the Examiner asserts it would have been obvious to do so, as taught by SCHMIDT. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER, YOON, and CABASSO, Appellants note that SCHMIDT fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that SCHMIDT likewise fails to teach or suggest two-way communication between the recited control unit and electronic device, as recited in claim 17.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 17, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Moreover, notwithstanding what SCHMIDT teaches, this document fails to provide the requisite motivation or rationale to render the asserted combination of FISHER, YOON, and CABASSO proper under 35 U.S.C. § 103(a), such that this rejection is improper and should be withdrawn.

Thus, Appellants submit that claims 24 – 26 are allowable at least for the reason that these claims depend from allowable base claims, and because these claims recite additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER, YOON, CABASSO, and SCHMIDT renders obvious the

combination of features recited in at least claims 24 – 26.

Claim 24:

Appellants submit that claim 24 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO and SCHMIDT fail to positively disclose a heating device coupled to said backup battery and to said fuel cell that is structured and arranged to heat said fuel cell, as recited in claim 24.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 24 is improper and should be withdrawn.

Claim 25:

Appellants submit that claim 25 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO and SCHMIDT fail to positively disclose a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature, as recited in claim 25.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 25 is improper and should be withdrawn.

Claim 26:

Appellants submit that claim 26 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present

invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO and SCHMIDT fail to positively disclose said control unit is coupled to said heating device and to said temperature measuring device in order to control and regulate the temperature of said fuel cell, as recited in claim 26.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 26 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 24 – 26 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of YOON and further in view of CABASSO and SCHMIDT and an early allowance of all claims on appeal.

(H) The Rejection of Claim 27 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of YOON and further in view of CABASSO and WOODWARD is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

While acknowledging that none of FISHER, YOON, or CASSABO teaches or suggests a dump resistor coupled to the conversion device, the Examiner asserts it would have been obvious to do so, as taught by WOODWARD. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER, YOON, and CABASSO, Appellants note that WOODWARD fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that WOODWARD likewise fails to teach or suggest two-way communication between the recited control unit and electronic device, as recited in claim 17.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 17, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Moreover, as WOODWARD is directed to controlling a hydroelectric ac generator, there is no teaching or suggestion for using this device in conjunction with a fuel cell. Further, WOODWARD fails to provide the requisite motivation or rationale to render the asserted combination of FISHER, YOON, and CABASSO proper under 35 U.S.C. § 103(a), such that this rejection is improper and should be withdrawn.

Thus, Appellants submit that claim 27 is allowable at least for the reason that it depends from allowable base claims, and because it recites additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of

FISHER, YOON, CABASSO, and WOODWARD renders obvious the combination of features recited in at least claim 27.

Accordingly, Appellants request the Examiner reconsider and withdraw the rejection of claim 27 under 35 U.S.C. § 103(a) and indicate that these claims are allowable.

Claim 27:

Appellants submit that claim 27 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO and WOODWARD fail to positively disclose a dump resistor coupled to said conversion device that is structured and arranged to consume additional load from said fuel cell, as recited in claim 27.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 27 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 27 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of YOON and further in view of CABASSO and WOODWARD and an early allowance of all claims on appeal.

(I) The Rejection of Claims 3, 5, 10, and 35 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of CABASSO and further in view of KOMATSU is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

The Examiner acknowledges that neither FISHER nor CASSABO teach or suggest an up converter coupled to a DC/DC converter, but that it would have been obvious to do so in view of the disclosure of KOMATSU. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER and CABASSO, Appellants note that KOMATSU fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that KOMATSU likewise fails to teach or suggest a conversion device coupled to said fuel cell to convert an input voltage as low as 0.3 V to a higher output voltage to operate the electronic device, as recited in claim 1, or boosting an output voltage of the fuel cell as low as 0.3V to a level required by the electronic device, as recited in claim 33.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 1 and 33, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Moreover, as KOMATSU is directed to hybrid vehicles, Appellants submit this document is wholly unrelated to the subject matter of the other applied documents, such that it would not have been obvious to combine these documents in the manner asserted by the Examiner. Appellants further note that, notwithstanding any particular teaching of this document, KOMATSU fails to provide the requisite motivation or rationale to render the asserted combination of FISHER and CABASSO proper under 35 U.S.C. § 103(a), such that this rejection

is improper and should be withdrawn.

While the Examiner asserts KOMATSU's disclosure of hybrid vehicles is in the same field as a fuel cell control device, Appellants submit this assertion is not even arguably supportable. As KOMATSU relates to a hybrid vehicles, one ordinarily skilled in the art would not even arguably refer to such subject matter when concerned with controlling simply a battery/fuel cell, since the concerns for controlling a hybrid vehicle are unrelated to those of a battery/fuel cell. Of course, even assuming, *arguendo*, one were to find it obvious to refer to KOMATSU for merely controlling a fuel cell, which Appellants submit one would not, there is no arguable teaching or suggestion in KOMATSU for converting a voltage as low as 0.3 V or for controlling a fuel cell, such that the art of record fails to provide the requisite motivation or rationale for modifying any proper combination of FISHER and CABASSO. Thus, Appellants submit the art of record fails to teach or suggest any arguable combination of the applied art that would render unpatentable the invention recited in the independent claims 1 and 33.

Thus, Appellants submit that claims 3, 5, 10, and 35 are allowable at least for the reason that these claims depend from allowable base claims, and because these claims recite additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER, CABASSO, and KOMATSU renders obvious the combination of features recited in at least claims 3, 5, 10, and 35.

Claim 3:

Appellants submit that claim 3 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of KOMATSU fail to positively disclose said conversion device

further includes an up converter coupled to said DC/DC converter in order to boost an output voltage of said DC/DC converter to the higher voltage to operate the electronic device, as recited in claim 3.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 3 is improper and should be withdrawn.

Claim 5:

Appellants submit that claim 5 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of KOMATSU fail to positively disclose a battery up converter coupled to said backup battery to boost a voltage of said backup battery to a necessary level, as recited in claim 5.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 5 is improper and should be withdrawn.

Claim 10:

Appellants submit that claim 10 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of KOMATSU fail to positively disclose a backup battery coupled to said conversion device in order to at least supplement the output of DC/DC converter, and a battery up converter coupled to said backup battery to boost a voltage of said backup battery to a necessary level, wherein said control unit is further coupled to said backup battery

and to said battery up converter in order to control and regulate the energy supplied to the electronic device, as recited in claim 10.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 10 is improper and should be withdrawn.

Claim 35:

Appellants submit that claim 35 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of KOMATSU fail to positively the boosting of the output voltage further comprises boosting the output voltage of the DC/DC converter to the higher voltage via an up converter to operate the electronic device, as recited in claim 35.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 35 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claims 3, 5, 10, and 35 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of CABASSO and further in view of KOMATSU and an early allowance of all claims on appeal.

(J) The Rejection of Claim 20 Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of YOON and further in view of CABASSO and KOMATSU is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

While acknowledging that none of FISHER, YOON, or CASSABO teaches or suggests an up converter, the Examiner asserts it would have been obvious to do so, as taught by KOMATSU. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER, YOON, and CABASSO, Appellants note that KOMATSU fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that KOMATSU likewise fails to teach or suggest two-way communication between the recited control unit and electronic device, as recited in claim 17.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 17, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Moreover, as KOMATSU is directed to hybrid vehicles, Appellants submit this document is wholly unrelated to the subject matter of the other applied documents, such that it would not have been obvious to combine these documents in the manner asserted by the Examiner. Thus, Appellants submit KOMATSU fails to provide the requisite motivation or rationale to render the asserted combination of FISHER, YOON, and CABASSO proper under 35 U.S.C. § 103(a), such that this rejection is improper and should be withdrawn.

Thus, Appellants submit that claim 20 is allowable at least for the reason that it depends from allowable base claims, and because it recites additional features that further defines the

invention over the art of record. Thus, Appellants submit that no proper combination of FISHER, YOON, CABASSO, and KOMATSU renders obvious the combination of features recited in at least claim 20.

Accordingly, Appellants request the Examiner reconsider and withdraw the rejection of claim 20 under 35 U.S.C. § 103(a) and indicate that these claims are allowable.

Claim 20:

Appellants submit that claim 20 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of YOON and further in view of CABASSO and KOMATSU fail to positively disclose said conversion device further includes an up converter coupled to said DC/DC converter in order to boost an output voltage of said DC/DC converter to the higher voltage to operate the electronic device, as recited in claim 20.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 20 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 20 is under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of YOON and further in view of CABASSO and KOMATSU and an early allowance of all claims on appeal.

(K) The Rejection of Claim 11 is Under 35 U.S.C §103(a) as being Unpatentable over FISHER in view of CABASSO and further in view of KOMATSU and SCHMIDT is in Error, the Rejection Should be Reversed, and the Application Should be Remanded to the Examiner.

The Examiner acknowledges that neither FISHER nor CASSABO teach or suggest an up converter coupled to a DC/DC converter, but that it would have been obvious to do so in view of the disclosure of KOMATSU. Appellants traverse the Examiner's assertions.

In addition to the above-noted discussion of FISHER, CABASSO, and KOMATSU, Appellants note that SCHMIDT fails to teach or suggest any of the subject matter noted above as deficient in the other applied documents. That is, Appellants submit that SCHMIDT likewise fails to teach or suggest a conversion device coupled to said fuel cell to convert an input voltage as low as 0.3 V to a higher output voltage to operate the electronic device, as recited in claim 1.

Because none of the applied documents teach or suggest at least the above-noted features of at least independent claims 1, Appellants submit no proper combination of these documents can even arguably render unpatentable the instant invention.

Appellants further note that, notwithstanding any particular teaching of this document, SCHMIDT fails to provide the requisite motivation or rationale to render the asserted combination of FISHER, CABASSO, and KOMATSU proper under 35 U.S.C. § 103(a), such that this rejection is improper and should be withdrawn.

Thus, Appellants submit that claim 11 is allowable at least for the reason that it depends from allowable base claims, and because it recites additional features that further defines the invention over the art of record. Thus, Appellants submit that no proper combination of FISHER, CABASSO, KOMATSU and SCHMIDT renders obvious the combination of features

recited in at least claims 11.

Claim 11:

Appellants submit that claim 11 is allowable at least for the reason that it depends from allowable base claims and because it recites additional features that further define the present invention. In particular, Appellants submit that disclosure and figures of FISHER in view of CABASSO and further in view of KOMATSU and SCHMIDT fail to positively disclose a heating device coupled to said backup battery and to said fuel cell that is structured and arranged to heat said fuel cell, and a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature, wherein said control unit is further coupled to said heating device and to said temperature measuring device in order to control and regulate the temperature of said fuel cell as recited in claim 11.

Accordingly, Appellants submit that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 103(a). Thus, Appellants submit that the rejection of independent claim 11 is improper and should be withdrawn.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 11 under 35 U.S.C. § 103(a) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over FISHER in view of CABASSO and further in view of KOMATSU and SCHMIDT and an early allowance of all claims on appeal.

(L) Conclusion

Claims 1, 2, 4, 9, 16, 33, 34, 36, 37, and 41 are patentable under 35 U.S.C. § 103(a) over FISHER in view of CABASSO; Claims 8 and 40 are patentable under 35 U.S.C. § 103(a) over FISHER in view of CABASSO and further in view of WOODWARD; Claims 13 – 15 and 42 are patentable under 35 U.S.C. § 103(a) over FISHER in view of CABASSO and further in view of YOON; Claims 17, 29 – 32, and 43 are patentable under 35 U.S.C. § 103(a) over FISHER in view of YOON; Claims 18, 19, and 21 – 23 are patentable under 35 U.S.C. § 103(a) over FISHER in view of YOON and further in view of CABASSO; Claims 6, 7, 38, and 39 are patentable under 35 U.S.C. § 103(a) over FISHER in view of CASSABO and further in view of SCHMIDT; Claims 24 – 26 are patentable under 35 U.S.C. § 103(a) over FISHER in view of YOON and further in view of CABASSO and further in view of SCHMIDT; Claim 27 is patentable under 35 U.S.C. § 103(a) over FISHER in view of YOON and further in view of CABASSO and further in view of WOODWARD; Claims 3, 5, 10, and 35 are patentable under 35 U.S.C. § 103(a) over FISHER in view of CABASSO and further in view of KOMATSU; Claim 20 is patentable under 35 U.S.C. § 103(a) over FISHER in view of YOON and further in view of CABASSO and further in view of KOMATSU; and Claim 11 is patentable under 35 U.S.C. § 103(a) over FISHER in view of CABASSO and KOMATSU and further in view of SCHMIDT.

Specifically, the applied art of record fails to render unpatentable the unique combination of features recited in Appellant's claims 1 – 11, 13 – 27, and 29 – 43. Accordingly, Appellant respectfully requests that the Board reverse the Examiner's decision to finally reject 1 – 11, 13 – 27, and 29 – 43 under 35 U.S.C. § 103(a) and remand the application to the Examiner for withdrawal of the rejection.

Thus, Appellant respectfully submits that each and every pending claim of the present

application meets the requirements for patentability under 35 U.S.C. §112, second paragraph, 35 U.S.C. §102(b), and 35 U.S.C. §103(a), and that the present application and each pending claim are allowable over the prior art of record.

Respectfully submitted,
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Attachments: Claims Appendix
Evidence Appendix
Related Proceedings Appendix

8) CLAIMS APPENDIX

The following listing of claims is a listing of all pending claims in the instant application:

Listing of Claims

1. (Original) An power unit for an electronic device, comprising:
a fuel cell having a low output voltage between 0.3 and 1 V;
a conversion device coupled to said fuel cell to convert an input voltage as low as 0.3 V
to a higher output voltage to operate the electronic device.
2. (Original) The power unit in accordance with claim 1, wherein said
conversion device comprises a DC/DC converter.
3. (Original) The power unit in accordance with claim 2, wherein said
conversion device further includes an up converter coupled to said DC/DC converter in order to
boost an output voltage of said DC/DC converter to the higher voltage to operate the electronic
device.
4. (Original) The power unit in accordance with claim 1, further comprising a
backup battery coupled to said conversion device in order to at least supplement the output of
DC/DC converter.
5. (Original) The power unit in accordance with claim 4, further comprising a
battery up converter coupled to said backup battery to boost a voltage of said backup battery to a
necessary level.
6. (Original) The power unit in accordance with claim 4, further comprising a
heating device coupled to said backup battery and to said fuel cell that is structured and arranged
to heat said fuel cell.

7. (Original) The power unit in accordance with claim 6, further comprising a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature.

8. (Original) The power unit in accordance with claim 1, further comprising a dump resistor coupled to said conversion device that is structured and arranged to consume additional load from said fuel cell.

9. (Original) The power unit in accordance with claim 1, further comprising a control unit structured and arranged to control operation of said conversion device.

10. (Original) The power unit in accordance with claim 9, further comprising:
a backup battery coupled to said conversion device in order to at least supplement the output of DC/DC converter; and

a battery up converter coupled to said backup battery to boost a voltage of said backup battery to a necessary level,

wherein said control unit is further coupled to said backup battery and to said battery up converter in order to control and regulate the energy supplied to the electronic device.

11. (Original) The power unit in accordance with claim 10, further comprising:
a heating device coupled to said backup battery and to said fuel cell that is structured and arranged to heat said fuel cell; and

a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature,
wherein said control unit is further coupled to said heating device and to said temperature measuring device in order to control and regulate the temperature of said fuel cell.

12. (Original) The power unit in accordance with claim 9, further comprising a dump resistor coupled to said conversion device that is structured and arranged to consume additional load from said fuel cell, wherein said control unit is coupled to said dump in order to

control and regulate operation of said converter.

13. (Original) The power unit in accordance with claim 9, said control unit comprising:

an A/D converter structured to receive voltage and current data from said conversion device;

a D/A converter structured to output reference voltage and current levels; and

a data processor arranged to receive data from said A/D converter and to forward data to said D/A converter.

14. (Original) The power unit in accordance with claim 13, further comprising:
a charger interface coupled to said data processor; and
a battery monitor coupled to said charger interface structured and arranged to collect battery data.

15. (Original) The power unit in accordance with claim 13, further comprising a host interface structured to provide two-way communication between said control unit and the electronic device.

16. (Original) The power unit in accordance with claim 1, wherein said fuel cell is an individual fuel cell.

17. (Original) A power unit for an electronic device, comprising:
a fuel cell;
a control unit structured and arranged to control and regulate said fuel cell; and
a communication interface structured to provide two-way communication between said control unit and the electronic device.

18. (Original) The power unit in accordance with claim 17, wherein said fuel cell

is an individual fuel cell having a low voltage of between 0.3 and 1V, said power unit further comprises a conversion device coupled to said fuel cell to convert an input voltage from said fuel cell as low as 0.3 V to a higher output voltage to operate the electronic device.

19. (Original) The power unit in accordance with claim 18 wherein said conversion device comprises a DC/DC converter.

20. (Original) The power unit in accordance with claim 19, wherein said conversion device further includes an up converter coupled to said DC/DC converter in order to boost an output voltage of said DC/DC converter to the higher voltage to operate the electronic device.

21. (Original) The power unit in accordance with claim 18, further comprising a backup battery coupled to said conversion device in order to at least supplement the output of DC/DC converter.

22. (Original) The power unit in accordance with claim 21, further comprising a battery up converter coupled to said backup battery to boost a voltage of said backup battery to a necessary level.

23. (Original) The power unit in accordance with claim 22, wherein said control unit is coupled to said conversion device, backup battery, and battery up converter in order to control and regulate the energy supplied to the electronic device.

24. (Original) The power unit in accordance with claim 21, further comprising a heating device coupled to said backup battery and to said fuel cell that is structured and arranged to heat said fuel cell.

25. (Original) The power unit in accordance with claim 24, further comprising a temperature measuring device coupled to said fuel cell to monitor fuel cell temperature.

26. The power unit in accordance with claim 25, wherein said control unit is coupled to said heating device and to said temperature measuring device in order to control and regulate the temperature of said fuel cell.

27. (Original) The power unit in accordance with claim 18, further comprising a dump resistor coupled to said conversion device that is structured and arranged to consume additional load from said fuel cell.

28. (Original) The power unit in accordance with claim 27, wherein said control unit is coupled to said dump in order to control and regulate operation of said converter.

29. (Original) The power unit in accordance with claim 17, said control unit comprising:

an A/D converter structured to receive voltage and current data from said conversion device;

a D/A converter structured to output reference voltage and current levels; and

a data processor arranged to receive data from said A/D converter and to forward data to said D/A converter.

30. (Original) The power unit in accordance with claim 29, further comprising:
a charger interface coupled to said data processor; and
a battery monitor coupled to said charger interface structured and arranged to collect battery data.

31. (Original) The power unit in accordance with claim 29, further comprising a host interface structured to provide two-way communication between said control unit and the electronic device.

32. (Original) The power unit in accordance with claim 17, wherein said fuel cell

is an individual fuel cell.

33. (Original) A process for control and regulation of an electronic device powered by a fuel cell, said process comprising:

coupling a fuel cell to an electronic device;

boosting an output voltage of the fuel cell as low as 0.3V to a level required by the electronic device.

34. (Original) The process in accordance with claim 33, wherein the boosting of the output voltage is performed by a DC/DC converter.

35. (Original) The process in accordance with claim 34, wherein the boosting of the output voltage further comprises boosting the output voltage of the DC/DC converter to the higher voltage via an up converter to operate the electronic device.

36. (Original) The process in accordance with claim 34, further comprising supplementing the output of the DC/DC converter with a backup battery, whereby the fuel cell is utilized at a maximum efficiency capacity.

37. (Original) The process in accordance with claim 36, further comprising boosting a voltage of said backup battery to a necessary level via a battery up converter.

38. (Original) The process in accordance with claim 36, further comprising heating the fuel cell via the backup battery.

39. (Original) The process in accordance with claim 38, further comprising monitoring fuel cell temperature.

40. (Original) The process in accordance with claim 33, further comprising consuming additional load from the fuel cell via a dump resistor coupled to the conversion device that is structured and arranged to consume additional load from said fuel cell.

41. (Original) The process in accordance with claim 33, further comprising controlling the individual components of the power unit via a control unit.

42. (Original) The process in accordance with claim 41, further comprising establishing two-way communication between the control unit and the electronic device.

43. (Original) A process for control and regulation of an electronic device powered by a fuel cell, said process comprising:

coupling a fuel cell to an electronic device;

controlling operation of the fuel cell via a control unit; and

establishing two-way communication between the control unit and the electronic device.

(9) **EVIDENCE APPENDIX**

None.

(10) **RELATED PROCEEDINGS APPENDIX**

None.